DOCUMENT RESUME

ED 450 248 CE 081 395

AUTHOR	Genda, Yuji; Kurosawa, Masako
TITLE	Transition from School to Work in Japan.
PUB DATE	2001-02-06
NOTE	48p.; Paper presented at the Annual NBER-CEPR-TCER Conference (13th, December 15-16, 2000).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Career Choice; Career Education; College Graduates; Counselor Role; Developed Nations; Developing Nations; *Education Work Relationship; Employed Women; Employer Employee Relationship; *Employment Level; *Employment Opportunities; Females; Foreign Countries; High School Graduates; High Schools; Higher Education; *Job Satisfaction; Labor Market; Labor Supply; Males; Outcomes of Education; School Guidance; *Unemployment; *Vocational Adjustment
IDENTIFIERS	*Japan

ABSTRACT

Using retrospective data of young people's work experience in Japan, a study found that initial labor market conditions (i.e., when workers first enter the labor market after permanently leaving school) have a significant lasting impact on the employment experiences of workers in their teens and twenties. An increase in the unemployment rate at the time of labor market entry reduces the probability of gaining full-time regular employment, and more importantly, increases the future probability of workers to leave employers by lowering the quality of job matches. The study also found that the vocational guidance or recommendations workers received at school could be effective in raising the quality of job matches. The adverse effect of initial unemployment rates on employment opportunities was most pronounced among female college graduates. (Contains 21 references.) (Author/KC)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 450 248

13th Annual NBER-CEPR-TCER Conference

Unemployment

6 Feb. 2001

Transition from School to Work in Japan

Yuji Genda
Gakushuin University

Masako Kurosawa
Meijigakuin University,

February 2001

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

M. Kurosawa

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

CE081395

BEST COPY AVAILABLE

13th Annual NBER-CEPR-TCER Conference *Unemployment*

Transition from School to Work in Japan

Yuji Genda and Masako Kurosawa

15–16 December 2000

JEL No. J24, J63, J64

ABSTRACT

Using retrospective data of young people's work experience in Japan, this paper found that initial labor market conditions, i.e., when workers first enter the labor market after permanently leaving school, have a significant lasting impact on the employment experiences of workers in their teens and twenties. An increase in the unemployment rate at the time of labor market entry reduces the probability of gaining full-time regular employment, and more importantly, increases the future probability of workers to leave employers by lowering the quality of job matches. It was also found that the vocational guidance or recommendations workers received at school could be effective in raising the quality of job matches. The adverse effect of initial unemployment rates on employment opportunities was most profoundly observed among female college graduates.

*

1. Introduction

Low rates of unemployment and turnover, and a high proportion of obtaining full-time regular jobs straight out of school, have been some of the unique characteristics of the youth labor market in Japan. This seemingly "orderly" system of school-to-work transition in this country has been attributed to the coordinated function of schools and employers in allocating students into stable jobs that involve continuous, on-the-job training under long-term employment practices. However, this portrait may no longer be appropriate.

The Japanese economy has been experiencing an economic slump since the early 1990s. The unemployment rate rose above 4% for the first time in 1997 and, in February 2000, reached an historical high of seasonally adjusted 4.9%. Meanwhile, the youth unemployment rate has also risen, making it the group most affected by the recession (see Figure 1). Moreover, since the early 1990s, there has been a steady decline in the proportion of new school leavers obtaining full-time regular jobs.[1] For instance, only 20–22% of those born before 1970 went into the labor market without obtaining full-time regular jobs when they left school. This ratio has increased to above 30% for those born in 1978 and entering the labor market sometime between 1993 and 2000 (Kosugi, 2000). Figure 2 shows that once young people are in the labor market, they are also increasingly unwilling or unable to take on full-time jobs. While the turnover rate among young workers has been relatively stable throughout the 1980s and the 1990s, the underlying tendency for workers to change jobs has been rising rapidly since the early 1990s.[2]

What is happening to the Japanese youth labor market? This paper uses recall data of national cross-section samples of workers below 30 years of age, to generate work histories of young people

[1] Full-time regular jobs in this context mean jobs in which workers are hired for an indefinite period to work for a certain number of scheduled hours, usually longer than 35 hours per week, and more than 18 days per month.
[2] In 1992, the proportion of employees aged 15 to 24 years wishing to change jobs was 19.6%. This percentage had increased to 22.1% by 1997 (Employment Status Survey(MCA(1997))). This increase was much larger than the increase among older workers: for instance, for 45 to 54 year olds, the figure increased from 6.7% to 7.6% during the same period.

over the period after completion of initial education, and use such data to investigate the effects of overall unemployment and the role of school on employment experiences of young workers.

While it is evident that an increase in the overall unemployment rate generates a larger proportion of new school leavers who cannot obtain full-time jobs, little research has examined the relationships between increased unemployment, education, and gender. More importantly, in Japan, no studies have investigated reasons for the rapid increase in turnover rates of young full-time workers, even in recession periods when it is hard to find new jobs. This study investigates the hypothesis that the labor market conditions upon leaving school, and the effectiveness of job guidance at school, will influence job-matching quality, which in turn determines the likelihood of young people leaving their first employer. The paper also attempts to identify the factors influencing the time taken by those school leavers who did not obtain full-time jobs, to achieve their first job opportunities.

The paper is organized as follows. Section 2 provides hypothetical explanations for the impact of the initial labor market conditions and job guidance at school, on job search and turnover. Section 3 describes the characteristics of the data set used in this paper. Section 4 contains the estimation results of employment and turnover probabilities, and Section 5 summarizes the findings.

2. Effects of the initial labor market conditions and school on the employment prospects of young people

The recent change towards a disruption of the traditionally smooth school-to-work transition in Japan seems deeply rooted in a deterioration of aggregate labor market conditions. In the United States and other OECD countries, it has been found that the demand for young workers is particularly sensitive to aggregate labor market conditions (Clark and Summers, 1982; Blanchflower and Freeman, 1999). In a country like Japan where firms provide extensive training to full-time workers, reduced opportunities for many young people to obtain full-time jobs would generate the serious problem of a decline in the overall labor productivity in the future.

The aggregate labor market conditions at the time that workers enter the labor market may also affect the quality of job match. Workers facing a tighter labor market upon graduating are more likely to receive multiple job offers, and hence choose jobs they consider better suited. On the other hand, when the labor market is loose, employers can be more selective in hiring. In this respect, the likelihood of workers obtaining full-time regular jobs is expected to be higher when the labor market is tight. However, it is not certain, *a priori*, if job matches made during tighter labor markets tend to be of higher quality. In the case of the United States, Bowlus (1995) found that job-match quality was adversely affected during recessions.[3]

Labor market conditions at the time of entry is of particular concern in Japan since it may even have a lasting effect on the future employment opportunities and outcomes of workers. "Successful" school-to-work transition has been placing newly graduated students into stable jobs that provide the intensive training necessary to pursue work. However, this school-to-work transition also means that access to good jobs with numerous training opportunities is mostly limited to new school leavers. In such an economy, if workers fail to obtain full-time jobs when they first enter the labor market, then their chances of obtaining full-time jobs later may be greatly diminished, irrespective of the labor market conditions in the future.

This should not be the case if labor mobility is relatively cost-less. For instance, Beaudry and DiNardo (1991) showed that the labor market in the United States is consistent with a model of implicit contract with cost-less mobility (Harris and Holmstorm (1982)). According to this model, the lowest unemployment rate since the beginning of a current job affects current wages. Hence, once the lowest unemployment rate since the beginning of a current job is controlled, current wages have no correlation with the unemployment rate at the time of hiring, or the rate at the labor market entry, or

[3] Bowlus (1995) found that a high unemployment rate at the start of a job increases the probability of leaving an employer, controlling for the current unemployment level.

the current rate.[4] In Japan, however, workers who happen to enter the labor market during high unemployment periods are found to suffer from adverse employment opportunities in the long run. That is, their average tenure becomes shorter and their wage becomes lower later on (Ohtake and Inoki, 1997; Genda, 1997; Ohta, 1999).[5]

In Japan, where most students are recruited during their senior year at school, schools have traditionally played a central role in matching new school leavers and employers.[6] In particular, informal contracts exist between high schools and firms, whereby employers obtain new recruits of quality selected by schools in return for regularly making job offers. These informal contracts are said to have successfully created incentives for non-college bound students to work hard at academic curricula, in order to obtain higher marks and improve their opportunities to be recommended to larger, more prestigious firms.

In contrast to high school students, job search activities of university students, are mostly left to individual students. Still, universities offer career counseling services, provide job offer information, and a list of alumni and alumnae that students can contact and from which they can acquire information regarding jobs. In the case of science and engineering majors, universities and graduate schools generally play a more significant role in that a professor's recommendation is crucial in obtaining a job. These functions of schools, if effective, should improve the quality of matches and reduce the information asymmetry between employers and workers, and thereby be expected to increase both the success rates and the duration of matches.

Against the backdrop of shrinking numbers of job offers and higher enrolment rates in higher education, these coordinated systems of high schools and employers in allocating students into stable jobs are being increasingly criticized for their lack of effectiveness. Criticisms are often targeted

---

[4] This was also shown to hold in Newmark (1998).
[5] In particular, Ohtake and Inoki (1997) used cohort data to show that the effect of labor market conditions at the time of entry on adult wages remained significant even after controlling for the cohort size effect.
[6] See Mitani (1999) for details regarding institutional arrangements in job placements at high schools.

towards the formal and informal practices that prohibit any direct communication between high school students and employers, and that limit job applications to a single student to one employer at a time. The use of school records as the major criterion for selecting students to be recommended is another practice that is said to lower the quality of matches made through schools. How effective are schools in moving young workers into the labor market? This paper attempts to measure the effect that vocational guidance and school recommendations have on the quality of job matches, by estimating the effect on the probability of staying employed.

In measuring the effects of labor market conditions and schools on employment experiences of young people, it is important to control for changes in their preferences: tendencies to avoid making commitments too early, and favoring more personal freedom. For instance, the percentage of "idle" (that is, not in school or working) young workers has been constantly increasing since the early 1990s despite some improvements in the labor market conditions between 1996 and 1998 (Ministry of Labor, 2000). Wealthier and more tolerant parents who support their children and allow the postponement of family responsibilities may also be making it easier for young people to realize their wishes.[7] In this paper, we take these changes into account either by using a trend term, or answers to various survey questions regarding their preferences.

3. Overview of the data

The data used in this paper are derived from the Survey on Young Employees (*Jyakunenshya Shugyo Jittai Chosa*) conducted by the Ministry of Labor in 1997. In this section, we define the population of the sample used, and give a preliminary overview of the youth labor market in Japan based on this data.

The Survey was administered throughout Japan in October 1997 to 21,000 randomly chosen

[7] It is also possible that the deteriorated job market for young people is responsible for these phenomena.

workers aged between 15 and 29 years, who worked at approximately 12,000 private establishments, all having five or more regular employees. This study used the employees' recall data to generate work histories over the period after completion of initial education.[8] The resulting samples contain workers who entered the labor market for the first time between 1982 and 1997.

The study excludes young people who, at the time of the survey, were working either at public institutions or small firms with fewer than five regular employees, as well as those not in the labor force or unemployed. Thus, the sample population constituted approximately 68% of the entire youth population aged between 15 and 29 years in 1997 (Employment Status Survey (MCA(1997))) and does not contain young people who were not working or were not at school at the time of the survey. This is certainly a limitation, although we still feel that it is worthwhile to examine the employment experiences of the majority of young workers in this country.[9]

Table 1 portrays the employment experiences of the sample population. It can be seen that 83.8% of all young workers in the sample population obtained full-time regular jobs as soon as they left school. Out of which, seventy-one per cent of them, that is, 59.8% of the entire sample population, were still working with their first full-time employer at the time of the survey. On the other hand, while 16.2% of the entire sample population did not obtain a full-time regular job upon leaving school, 10.7% have since obtained at least one full-time regular job. However, only 2.9% of these were still working with their first full-time employer at the time of the survey. The majority of workers who changed employers have experienced two different full-time regular jobs. It was found that 5.4% of all

---

[8] The original data included workers who were still enrolled in schools, but these samples were excluded from the analysis. Additionally, in this data, it was not possible to distinguish between cases where workers "graduated", from those who "left without obtaining certificate of graduation". In the text, the terms 'graduating' and 'leaving from schools' are used synonymously.

[9] It is also important to bear in mind a possibility of a selection bias caused by the nature of sampling in the data. Since the population represents those who were working at the time of the survey, individuals with very low motivation for work tend to be excluded from the sample. In particular, for males, since the percentage of working persons increases with age, younger samples in the data tend to include workers with stronger preference for work than older samples. Quite an opposite scenario may apply for females. Older samples tend to have stronger preferences for work than younger samples. In addition, since those who favor housework tend to drop out of the labor force sooner, these people tend to be excluded from the population of the sample. In the following analysis, an attempt to control for these possibilities in terms of age or trend term was made whenever possible.

young people in the sample population had not experienced full-time regular jobs since leaving school. The majority of these have been working part-time.

How do work attitudes differ in relation to the pattern of employment experiences? Table 2 shows the distribution of workers' willingness to improve their work skills. As the economy stagnates and the population rapidly ages, it is becoming increasingly costly for Japanese firms to invest heavily in human capital. As the human capital investment focus shifts from employers to employees, the willingness of individual workers to invest in themselves becomes an important factor influencing future labor productivity and the earnings of workers in Japan.

The figures in Table 2 represent the ratio of workers who answered "yes," "no," or "don't know", to the question, "Do you feel the need to improve your work related skills?", for each of the four patterns of past employment experiences at the time of the survey. It can be seen that willingness to improve work skills is lower for young people who did not obtain full-time regular jobs immediately after leaving school. In fact, willingness to improve work skills is the highest among workers who found full-time regular jobs after leaving school and remained with the same employer. Although this observation does not take account of any individual heterogeneities, this positive correlation between early stability and willingness to improve work skills provides a ground upon which to investigate the determinants of early stability for young workers.

As discussed in the previous section, job guidance at school is thought to play a weaker role in finding jobs for new graduates now than it did in the past. According to the data, however, this may not necessarily be the case. Figure 3 shows, for each school level, the ratio of workers who perceived the vocational guidance at school to be "useful" out of those who left school in a given year and obtained full-time regular jobs straight away. Special vocational schools have been doing a much better job than other types of schools in providing satisfactory vocational guidance. Apart from that, a slight but steady increase in the satisfaction ratio can be seen, particularly for high schools and junior/technical

colleges. Their increase in the satisfaction ratio has started in the early 1990s, which concided with the start of a recession. From this figure, at least, one cannot say that the role of schools in the process of transition to work has become less important. In the analysis that follows, a closer look is taken at the effect of vocational guidance and recommendations given by schools on the quality of job matches.

Another casual check, based on the data, on the claim that changes in young people's preferences or work attitudes are largely responsible for the recent changes in their employment experiences, is shown in Figure 4. This figure shows how reasons for not obtaining full-time regular jobs upon leaving school have been changing over time for workers who did not obtain full-time jobs upon leaving school. In Figure 4, there are no steady tendencies towards an increase in the ratio of young people who "didn't want to take a full-time regular job in the first place." As the economic conditions worsened, it became harder for workers to find any job, and the number of workers in this category seemed to have expanded faster than for those with preferences against full-time work.

4. Model of employment choice

This section provides quantitative analyses which investigate determinants of employment experiences of young workers in their early years after leaving school. The paper mainly examines the roles of labor market conditions and schools on three probabilities: (1) the probability of obtaining a full-time regular job upon leaving school; (2) the probability of leaving the first full-time employer for workers who obtained full-time regular jobs upon leaving school; and (3) the probability of obtaining a full-time regular job for workers who did not obtain full-time jobs upon leaving school.

4.1 Determinants of the probability to obtain a full-time job upon leaving school

In the sample, 82.6% of male and 78.3% of female workers obtained full-time regular jobs right after leaving school. The determinants of the probability to obtain full-time regular jobs upon leaving

school are estimated using a probit maximum likelihood framework, estimates of which are listed in Tables 3.1–3.3. The analysis revealed significant differences in probability across gender and education.

For example, males were 2 percentage points more likely than females to obtain full-time regular jobs upon leaving school, and university graduates were about 15 percentage points more likely than high school graduates to do so. In addition, a change in preferences, represented by a trend term, shows a significant decline in the probability to obtain full-time jobs over time. This trend term may also be capturing a gradual decline in employment opportunities facing young people, due to overall tendencies of firms to maintain the jobs of increasing numbers of older employees at the expense of young workers (Genda, 2001).

A separate estimation by gender revealed that, for males, university graduates were significantly more likely than others to obtain full-time regular jobs. On the other hand, for females, the probability of obtaining a regular full-time job is not significantly different for college graduates and vocational high school graduates, for instance. This also indicates that a difference in the probability of obtaining a full-time job between genders is the highest for college graduates. This finding sharply contrasts with observations in most other OECD countries where differences in employment probabilities across educational attainment is greater for females than males, and where gender differences are generally greater at lower levels of educational attainment (OECD, 1998).[10]

Aggregate labor market conditions at the time also exerted a significant effect on employment probabilities. Controlling for gender, education, and a trend term, a 1 percentage point increase in the national unemployment rate at the time workers leave school, indicated by the average rate observed during the fiscal year prior to leaving school, decreases the probability of obtaining full-time regular

[10] Notable exceptions to the former case are countries with apprenticeships, such as Austria, Denmark, Germany and Luxembourg. These countries have the highest overall employment rates for new school leavers and little dispersion of employment probabilities across gender or educational attainment. In OECD (1998), employment probability refers to probability of obtaining any job and is not confined to a full-time regular job as in this paper.

work by as much as 7.3 percentage points. It can be seen that an increase in the unemployment rate since the early 1990s in Japan has indeed been a major source of expansion in the share of new school leavers without full-time jobs.[11]

In order to see how the impact of labor market conditions differed across various school levels, the model was re-estimated separately for each school category. The marginal effect of the unemployment rate, controlling for a trend term, is shown in Figure 5. As can be seen, the magnitude of the effect is generally larger for arts majors (*bunkei* in Japanese), and is greater for females than for males. In particular, the unemployment rate is not significant for male workers who majored in science and engineering (*rikei* in Japanese) at all school levels. Those worst hit by the recent increase in the aggregate unemployment rate are female university graduates.

The unemployment rate at the time a worker first enters the labor market not only affects the employment probabilities at the time, but may also exert a long lasting effect on future employment experiences. To examine such possibilities, a multinomial logit model of the number of full-time regular jobs held until the time of the survey was estimated. Figures 6.1 and 6.2 show the marginal effects of two different unemployment measures—unemployment rate one year prior to leaving school, and the minimum unemployment rate since leaving school—on the probability of having 0, 1, 2, or 3 or more full-time regular jobs up to the time of the survey. The marginal effects shown in these figures are calculated from the multinomial logit models estimated separately for each gender, with

---

[11] One response to declining economic conditions is to postpone entering the labor market by either advancing to further education or delaying graduation. As far as the latter is concerned, there does not seem to be a clear tendency to warrant such possibility. For instance, the share of university graduates out of university enrollees four years earlier has increased from 90% in 1980 to 94.5% in 1997. As for the former, enrolment into higher education was stable during the 1980s but started to rise rapidly during the 1990s. Amongst high school graduates, the advancement rate into higher education, including specialized schools, was around 50% during the 1980s and increased to 70.9% in 1999. The advancement ratio of university graduates into graduate schools was just below 5% in 1980, and slowly increased to 10% in 1999 (Basic Statistical Survey on School (Ministry of Education(various years)). It is not clear, however, how much of this increase was a result of the deterioration in the labor market, or the direction of biases caused by this endogeneity. The expected benefit of delaying entry into the labor market during a recession may be higher for workers with higher ability. However, such a decision also depends on the family income, which is not available in the data. Measures other than the unemployment rate, such as openings-to-application ratio of non-new school leavers, were used to represent the labor market conditions at the time workers left school, and the results were consistent with those found in Table 3.

age and school levels as additional explanatory variables.

As expected, the higher the minimum unemployment rate experienced since leaving school, the higher the likelihood of experiencing only one full-time regular job. In addition, the likelihood of experiencing multiple numbers of full-time jobs is lower. In other words, the higher minimum unemployment rate tends to prevent workers with the first full-time jobs from changing employers.

A more interesting finding is that even after controlling for the time-path of labor market conditions up to the time of the survey, the unemployment rate at the time workers left school and entered the labor market for the first time continues to have an effect on employment experiences of young workers. For instance, controlling for age, education, and the minimum unemployment rate since the labor market entry, a 1 percentage point increase in the unemployment rate when workers left school raises the probability of never experiencing full-time regular jobs up to the time of the survey by 4 percentage points for males, and by as much as 10 percentage points for female workers. At the same time, it reduces the probability of experiencing only one full-time regular job by as much as 12 percentage points for females.

These findings suggest that the labor market conditions at the time workers leave school continue to have a significant effect on future employment experiences of youth in Japan, a finding consistent with Ohtake and Inoki (1997) and Ohta (1999). That is, high unemployment rates at the time workers enter the labor market, not only reduces the likelihood of finding full-time jobs at the time, but also reduces the likelihood of those workers ever finding a full-time job. It also reduces the likelihood of workers to stay employed with their first employer, resulting in an increase in the turnover rate. These effects were found to be particularly strong for females. In the following sections, the impact on the quality of job matches is discussed in more detail.

4.2 Determinants of the probability of leaving an employer

We turn next to examine the role of labor market conditions, preferences, schools, and other factors in determining the likelihood of leaving the first employer for those who found full-time regular jobs upon leaving school. As in Bowlus (1995), this study used tenure as an indicator of "good matches" to examine how the business cycle and schools affect the quality of job matches. The study controlled for workers' preferences in terms of the most important criteria for choosing jobs, in addition to a trend term. Using sub-samples of workers who obtained full-time regular jobs upon leaving school, the study adopted a Cox proportional hazard model with time-varying covariates and estimated the probability of leaving an employer, conditional on the employee's job tenure.

Let t be the duration of a regular full-time employment spell, and τ be a calendar time at which such a spell starts (i.e., when a worker leaves school). The hazard rate of leaving an employer $h_i(t)$ measures the probability of leaving the current employer at calendar time $\tau+t$, provided that the worker has stayed with that employer at least as long as t. Adopting the proportional hazard formulation, that hazard can be written as:

$$h_i(t,x_i;\beta,\alpha) = \exp(\beta' x(\tau_i))\, h_0(t;\alpha) \qquad (1)$$

where $h_0(t;\alpha)$, the baseline hazard, depends only on the elapsed employment duration, and $x(\tau)$ is a vector of explanatory variables observed at the start of the spell.

In analyzing the role of labor market conditions in the model, it is important to be able to estimate the effect of the unemployment rate that continuously varies over time even during the course of a spell. For instance, a sudden decrease in the unemployment rate during the spell is likely to increase the hazard rate at that point in time if it leads to workers getting better job offers from elsewhere. Moreover, to the extent that the unemployment rate is correlated over time, including the value at the start of the spell, while ignoring how it changes during the spell, is likely to lead to a biased estimate. On incorporating a time-varying unemployment rate into the model, equation (1) is rewritten as:

$$h_i(t,z(\tau_i+t), x(\tau_i);\beta,\gamma,\alpha) = \exp(\beta' x(\tau_i)+\gamma' z(\tau_i+t))\, h_0(t;\alpha) \qquad (2)$$

where $z(\tau_i+t)$ denotes the unemployment rate measured at calendar time τ_i+t.

The analysis used the average national unemployment rate during the fiscal year prior to workers' leaving schools. Vector x of explanatory variables includes school level, occupation, criteria in selecting jobs, main adviser in selecting jobs, receipt of vocational guidance at school, usefulness of such guidance, and the national unemployment rate one year prior to leaving school. Except for the unemployment rate, all variables in vector x were measured at the start of the employment spell that varies across individuals.

The advantage of utilizing the proportional hazard formulation is that it is possible to draw an inference about the effects of explanatory variables, z and x, without any knowledge of the functional form of the baseline hazard, although this means that we cannot estimate the parameters of the baseline hazard.[12] The estimated coefficients indicate the effect on the logarithm of relative hazard (h/h_0), and are listed in the first column of Tables 4.1 to 4.3.

Females are more likely to leave their employers, as are those with lower schooling levels.[13] In particular, for males, college graduates are far more likely to stay longer with their employer than others, irrespective of their fields of study. For females, however, differences between college graduates and others are not so large; in particular, college graduates in the field of arts have an expected duration not significantly different from that of junior college graduates. In addition, when the model was estimated separately for each education level, gender differences in the probability to stay employed were the largest among college graduates, especially among arts majors.

In addition to the effects of personal characteristics, factors such as labor market conditions and school vocational guidance also have significant impacts on the expected duration of the first full-time

---

[12] This utilizes ranks rather than values of the observed durations to estimate the parameters β and γ.

[13] In the case of the US, Lynch (1991) estimated the probability of leaving the first employer by using the Cox proportional hazard and found no significant differences in such probabilities between males and females.

employment. The effect of time-varying unemployment is negative, implying that when the unemployment rate goes up, the likelihood of workers leaving their employer at the time decreases. However, this effect is only significant among male workers, indicating that once employed, female workers are less responsive to the conditions of external labor market.

Having controlled for the continuous effect of the labor market conditions and the trend term, there still remains a significantly positive effect of the unemployment rate at the time workers left school.[14] In Table 4.1, the impact of the unemployment rate a year before leaving school, that is, 0.318, has the larger magnitude of determining job duration than does the time-varying unemployment rate, whose effect is–0.085. The significant positive impacts of the unemployment rate a year before leaving school are observed among both males and females, as shown in Tables 4.2 and 4.3. The initial labor market condition at the entry plays a crucial role in determining the likelihood of leaving the first employer. The full-time job matches made for those who left school during recessions tend to be of lower quality; thus, the likelihood of workers leaving employers increases and leads to shorter job tenures.[15]

We have also estimated the model with an indicator called the job openings-to-applications ratio (*yuko kyujin bairitsu*) in place of the overall unemployment rate, to reflect tightness of the labor market at the time workers left school. This ratio is computed from the number of job openings and job applicants reported at public employment security offices located throughout Japan.[16] The results are

---

[14] The sample used for this analysis is confined to those who obtained full-time regular jobs upon leaving school. This is likely to create a selection bias problem. In particular, the estimated effect of unemployment rate at the time workers left school tend to be underestimated in a likely scenario where individuals with higher ability are both more likely to obtain full-time regular jobs upon leaving school and have a higher propensity to stay employed. Thus, the estimate, which shows a positive correlation between unemployment rate at the time workers enter the labor market and the hazard rate of leaving an employer, should be viewed as a lower bound.

[15] There is also a possibility that the probability to obtain jobs in larger firms increases during the low unemployment period, which lowers workers' propensity to quit since larger firms tend to pay higher, seniority-based wages and have a larger internal labor market, within which workers have better chances to find suitable jobs. Unfortunately, this study has no information to control for the differences in the firm size distribution of jobs obtained over business cycles.

[16] Although not all applications or openings go through public placement offices, this ratio is widely used in Japan as an indicator that substitutes for the unemployment rate. Moreover, this figure excludes new-school leavers and hence, is not influenced by the possibly endogenous choice of young workers to delay labor force entry during recession periods. The openings-to-applications ratio also includes part-time applications and openings.

indicated in the second column of Tables 4.1 to 4.3. The negative effect of the job openings-to-application ratio during the fiscal year prior to leaving school and the positive effect of the time-varying job openings-to-application ratio are consistent with the earlier estimates using the aggregate unemployment rate. The effects of other variables have remained almost invariant.

As for the effect of schools, it was found that jobs, which have been recommended by parents, teachers, or alumni or alumnae, tend to last longer than jobs that workers themselves have chosen. Moreover, an especially important finding was that vocational guidance at school, when perceived as helpful in finding jobs, acts to significantly lower the likelihood of leaving an employer in Japan. This study confirms that effective vocational guidance and recommendations given by teachers at school still play an important role in raising the quality of job matches, and decreasing the possibility of leaving the first employer.

Table 5 lists these effects when they are estimated separately for each school level. Those who felt the vocational guidance received at school was useful tend to stay employed longer with the first employer for all educational categories, except for graduates who majored in engineering or science at technical or junior colleges and universities. For the graduates of engineering and science, it is the network of professors or laboratories rather than the vocational guidance of schools as a whole that seems to have a significant influence on the quality of job matches.

On the other hand, among the graduates of arts departments of technical or junior colleges and universities, the impact of not receiving any vocational guidance at schools was found to be significantly negative. At these schools, the proportion of graduates who have not received any vocational guidance is much higher than for others.[17] Workers who are able to find good jobs even without the help of schools tend to exclude themselves from receiving any vocational guidance

[17] At these schools, including general high school, receipt of such guidance is not compulsory, and thus, they are most susceptible to quality bias due to selection. For instance, 33.6% of arts majors as opposed to 24.0% of science majors of universities, and 25.2% of general high school graduates as opposed to 6.39% of vocational high school graduates in the sample had not received any vocational guidance at school.

provided by schools.

Among the most important criteria for selecting jobs, company size or name value, future prospects, social worthiness of the job, and convenience make jobs last significantly longer for both genders. For females, fringe benefits and social worthiness of the job have the largest effect in decreasing the likelihood of leaving their employer. It was also found that jobs chosen on the grounds of contents and work conditions are likely to last longer for females, but not for males. Jobs for males, on the other hand, tend not to last if they are chosen for their merit systems or good pay.

4.3 Determinants of time to obtain the first full-time job

It was seen in Section 4.1 that labor market conditions, as well as gender, education, and workers' preferences have significant influences on workers' employment choice at the time they leave their initial education. The question addressed in this sub-section is: What determines the likelihood of workers who do not obtain full-time regular jobs straight away from the start of their career, ever becoming full-time regular workers?

This analysis uses the Cox proportional hazard framework to model the probability of obtaining a full-time regular job conditional on time since leaving school. Here, the spell duration in question is the time to become a full-time regular worker after leaving school. As before, both the unemployment rate when a worker left school, as well as the unemployment rate that varies continuously throughout the spell are included.

Tables 6.1 to 6.3 present the estimated effects on the probability of obtaining the first full-time regular job for workers who did not obtain such jobs upon leaving school. Table 6.1 indicates that females take significantly longer than males to obtain a full-time job, and the graduates of engineering or science at special vocational schools or universities take a significantly shorter time to become full-time workers. However, as Tables 6.2 and 6.3 show, when the equation is estimated separately for

each gender, a college degree does not necessarily boost females' chances of obtaining full-time jobs, compared to junior college or special vocational school graduates.

The effect of the contemporaneous unemployment rate is significantly negative on the probability of obtaining full-time regular work. Controlling for this effect, the unemployment rate at the time workers left school is no longer significant for either gender. High unemployment rates at the time workers leave school, are likely to raise the intrinsic ability of workers who leave school without full-time regular jobs. However, having more workers competing for full-time jobs would make it more difficult to obtain such a job. The results here indicate that these effects may offset each other.

In the previous sections, it was seen that female workers, college graduates in particular, are affected the most during high unemployment periods such that they experience the largest decline in the probability of obtaining full-time jobs when they leave school. The analysis in this section showed that, even when the economy improves, female workers obtain no greater boost than male workers in their likelihood to obtain full-time jobs. In addition, the time taken to find full-time jobs for female college graduates was found not to be significantly shorter than for the female graduates of junior colleges or special vocational schools. These findings are consistent with the earlier findings from the multinomial logit estimates. Together, the findings suggest that the labor market condition at the time of labor market entry does indeed exert a long-lasting effect on the future employment experiences of female workers, college graduates in particular, that is more profound than that on male workers. At least as far as employment opportunities are concerned, the advantage of going to university is much smaller for females than for males, and the recent recession has certainly contributed to widening the gap between genders.

As expected, workers who did not want to take full-time regular jobs in the first place take longer to obtain full-time regular jobs. Controlling for such preferences explicitly, we also found a significant trend towards lower probability of obtaining full-time regular jobs over time.

4.4 Why higher education does not improve the chances for full-time jobs for females

In *Employment Outlook* (1998), the OECD states that the damaging effects of high and persistent unemployment are particularly evident for those with fewer educational qualifications and women (OECD, 1998, p.81). This is not, however, true for the educated females in Japan: higher educational attainment does not soften the negative impact of increasing unemployment rate on the probability of finding full-time jobs for females.

Why is higher education not necessarily linked to improved chances for full-time jobs with permanent contracts for females in Japan? It may be that the variance in turnover propensity or ability of female college graduates is so large that the experience of facing a difficulty in finding a full-time regular job at the start of their career acts as a signal of higher turnover propensity or lower ability. Alternatively, the high aggregate unemployment rate may create a large pool of female college graduates without full-time jobs, which increases the competition among females to obtain full-time employment.

Why have so many young Japanese females advanced to college or university when higher education does not always increase their chances of finding full-time jobs? The enrolment ratio in four-year college or university courses among high school graduates jumped from 15.2 % in 1990, to 29.4 % in 1999, for females. However, for males in the same period, it increased from 33.4 % to 46.5 %.[18] One reason for this increased enrolment ratio may partly come from a gradual increase in the wage differentials by education among female workers. The mean monthly wage of college graduates relative to that of high-school graduates among female full-time workers of all ages amounted to 1.32 in 1980, and rose a little to 1.35 in 1998, according to the Basic Survey on Wage Structure (Ministry of

[18] These figures are taken from Basic Statistical Survey on School (Ministry of Education(various years)).

Labor (various years)).[19] During the same period, the mean age and average years of job tenure increased more for female high-school graduates than for female college graduates. Considering these differences in compositional changes between the high-school and college graduated female workforce, the average returns to higher education must have actually risen for females.

As long as earnings differential widen, college or university enrolment will continue to grow even if female workers face difficulties in finding jobs after graduation. If labor market conditions worsen, however, smaller households' budgets and reduced employment opportunities are likely to reduce incentives for women to invest in higher education in the future.

Apart from these possibilities, this study has no evidence to deny other incentives for females to go to university or college. There still remains a possibly strengthened tendency that college graduated females are more likely to marry college graduated males, who generally earn higher income than less-educated males. In order to examine this issue in more detail, however, information from the longitudinal data on marital decisions, family situation, and family income is required; this information is not available in the data.

5. Concluding remarks

This paper has examined the determinants of employment experiences of young workers below the age of 30 years, using retrospective data of national cross-section samples in Japan, which consist of workers who entered the labor market between 1982 and 1997. In particular, this study has investigated the effect of aggregate unemployment and schooling on the probability of young workers to find full-time regular jobs, and their turnover behavior.

The aggregate labor market conditions at the time workers leave school have a significant impact on both the probability of obtaining full-time regular work and the tenure of employment. That is, high

[19] The monthly wage is the one paid at private companies with 10 or more employees, and does not include over-time

aggregate unemployment rates at the time workers enter the labor market were found not only to reduce the likelihood of workers finding full-time jobs at that time, but also reduced the quality of job matches, and thereby increased the likelihood of future turnover.

These findings suggest that adverse labor market conditions at the time workers leave school continue to have a significant lasting effect on the future employment experiences and human capital investment of young people in Japan. The fact that a high unemployment rate reduces the quality of job matches, implies the possibility of a decline in the efficiency of on-the-job training of young workers at firms. It has been pointed out that continuous and intensive on-the-job training, particularly for young people, is the source of high labor productivity in Japan. A further increase in the unemployment rate, however, would lower the quality of the matches made with new school leavers, and hence, would lower the expected returns from the investment of firm-based skills in new employees.

In contrast with other developed countries, in Japan, higher education does not necessarily increase the chances of females obtaining full-time jobs, nor does it weaken the damaging effect of higher unemployment rates. Moreover, once employed, female workers are less responsive to the conditions of external labor market than male workers. In order to further disentangle gender differences in turnover behavior and also to find possible ways which allow young workers to change career path and find a better match, the amount and incidence of different types of training and the role of training in determining the employment experiences of both male and female workers should be investigated.[20]

This study also found that advice and vocational guidance given to students at school might contribute to improved quality of job matches. This implies that there is room for improvement in the

---

payments or bonuses.

[20] Such studies have already been conducted in the US and UK (Lynch (1989, 1991, 1993), Blanchflower and Lynch (1994)).

effort of schools to make vocational guidance more effective, and calls for a specific analysis on what works and what does not work regarding the method and contents of the job guidance.

Finally, while this study has examined the process of obtaining and leaving the first full-time employment, the lack of available data has prevented the examination of the process of subsequent employment. Moreover, this study has not explicitly taken into account the family background of young workers, which is expected to be a significant factor in influencing employment experiences among them. In order to draw further implications, these issues should be examined in more detail by future studies.

References

Beaudry, P., and DiNardo, J. (1991). The effect of implicit contracts on the movement of wages over the business cycle: evidence from micro data, *J. Political Econ.* **99** (4), August, 665-688.

Blanchflower, D., and Freeman, R. (1999). The declining economic status of young workers in OECD countries, in *Youth Employment and Joblessness in Advanced Countries*, D. Blanchflower and R. Freeman (Eds.), The University of Chicago Press: Chicago.

Blanchflower, David and Lisa Lynch (1994). Training at work: a comparison of U.S. and British Youths, in *Training and the Private Sector: International Comparisons*, ed. Lynch L.,Chicago: The University of Chicago Press.

Bowlus, A.J. (1995). Matching workers and jobs: cyclical fluctuations in match quality, *J. Labor Econ.* **13** (2), April, 335-350.

Clark, K., and Summers, L. (1982). The dynamics of youth unemployment, in *The youth labor market problem: Its nature, causes, and consequences*, R. Freeman and D. Wise. (Eds.), The University of Chicago Press: Chicago.

Genda, Y. (1997). One chance (in Japanese), *The Monthly J. the Japan Institute of Labor*, **449**, October, 2-12.

Genda, Y. (2001). Who Really Lost Jobs in Japan?, in T. Tachibanaki and D. Wise (Eds.), *Labor Markets and Firm Benefit Policies in Japan and the United States*, The University of Chicago Press: Chicago forthcoming.

Harris, M., and Holmstorm, B. (1982). A Theory of Wage Dynamics, *Review of Economic Studies*, **49** July, 315-333.

Kosugi, R. (2000). Shinro kettei ni okeru ishiki to kodo (in Japanese), Research Report, The Japan Institute of Labour.

Lynch, Lisa (1989). The Youth Labor Market in the Eighties: Determinants of re-employment probabilities for young men and women, *The Review of Economics and Statistics*, p.37-45.

Lynch, Lisa (1991). The Role of Off-the-Job vs. On-the-Job Training for the Mobility of Women Workers, *American Economic Review*, May, p.151-156.

Lynch, Lisa (1993). Entry-level jobs: first rung on the employment ladder or economic dead end? *Journal of Labor Research*, Summer.

Management and Coordination Agency (MCA) (1997). *Employment Status Survey*, Japan.

Ministry of Education (various years). *Basic Statistical Survey on School*, Japan.

Ministry of Labor (2000). *White paper on Labor*, Japan.

Ministry of Labor (various years). *Basic Survey on Wage Structure*, Japan.

Mitani, N. (1999). The Japanese employment system and youth labour market, in *Preparing youth for the 21st century: the transition from education to the labour market*. OECD: Paris.

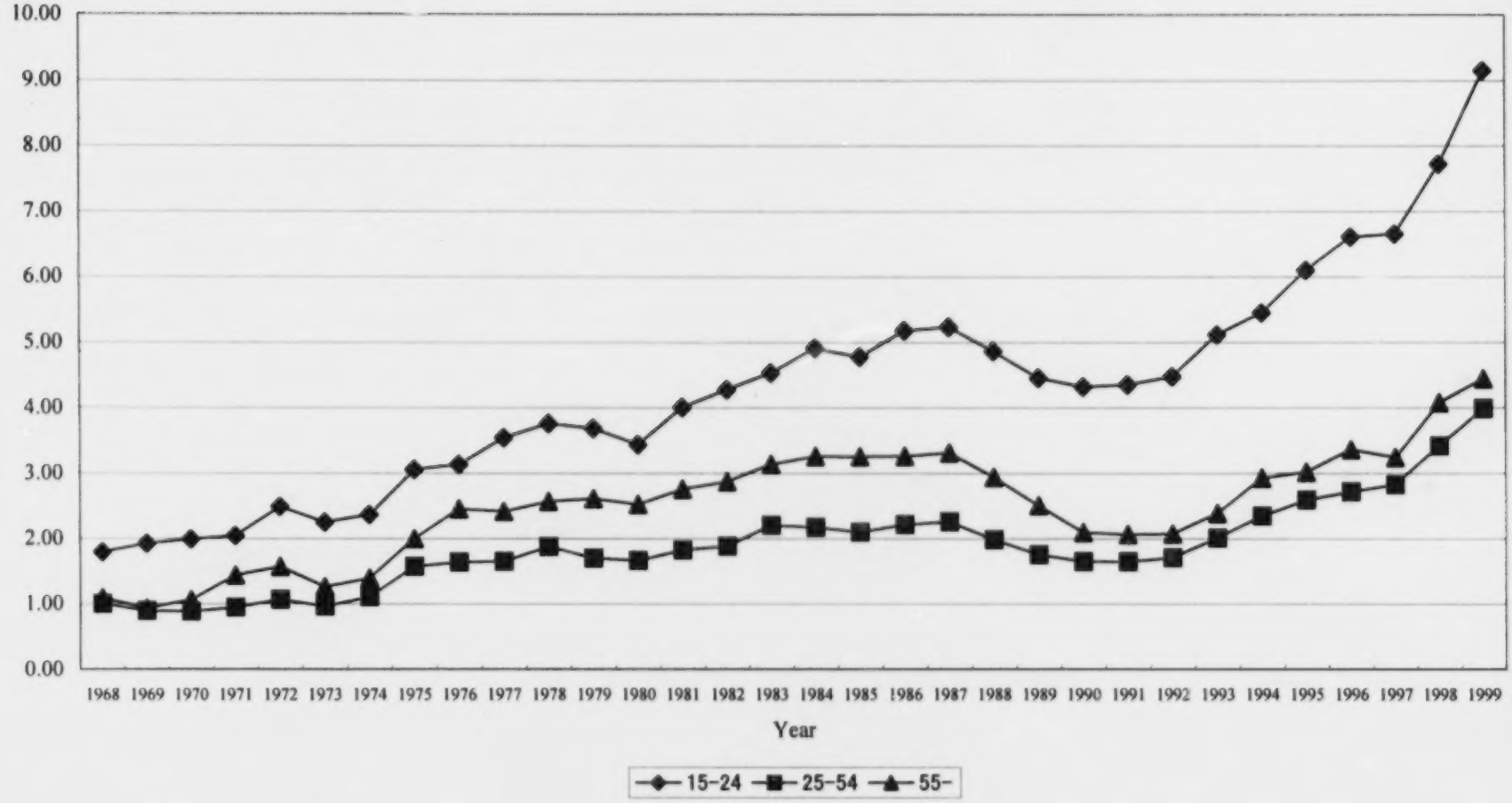
Neumark, D. (1998). Youth labor markets in the U.S.: Shopping around vs. staying put. NBER Working Paper No. W6581.

Ohta, S. (1999). Keikijyunkan to tenshokukodo (in Japanese), in *Nihonkeizai no Kozochousei to Rodoshijyo*, J. Nakamura and M. Nakamura (Eds.), Nihon Hyoron Sha.

Ohtake, F. and Inoki, T. (1997). Roudou shijyo ni okeru sedai koka, in *Gendai Makuro Keizai Bunseki*, K. Asako, S. Fukuda, and N. Yoshino (Eds.), University of Tokyo Press.

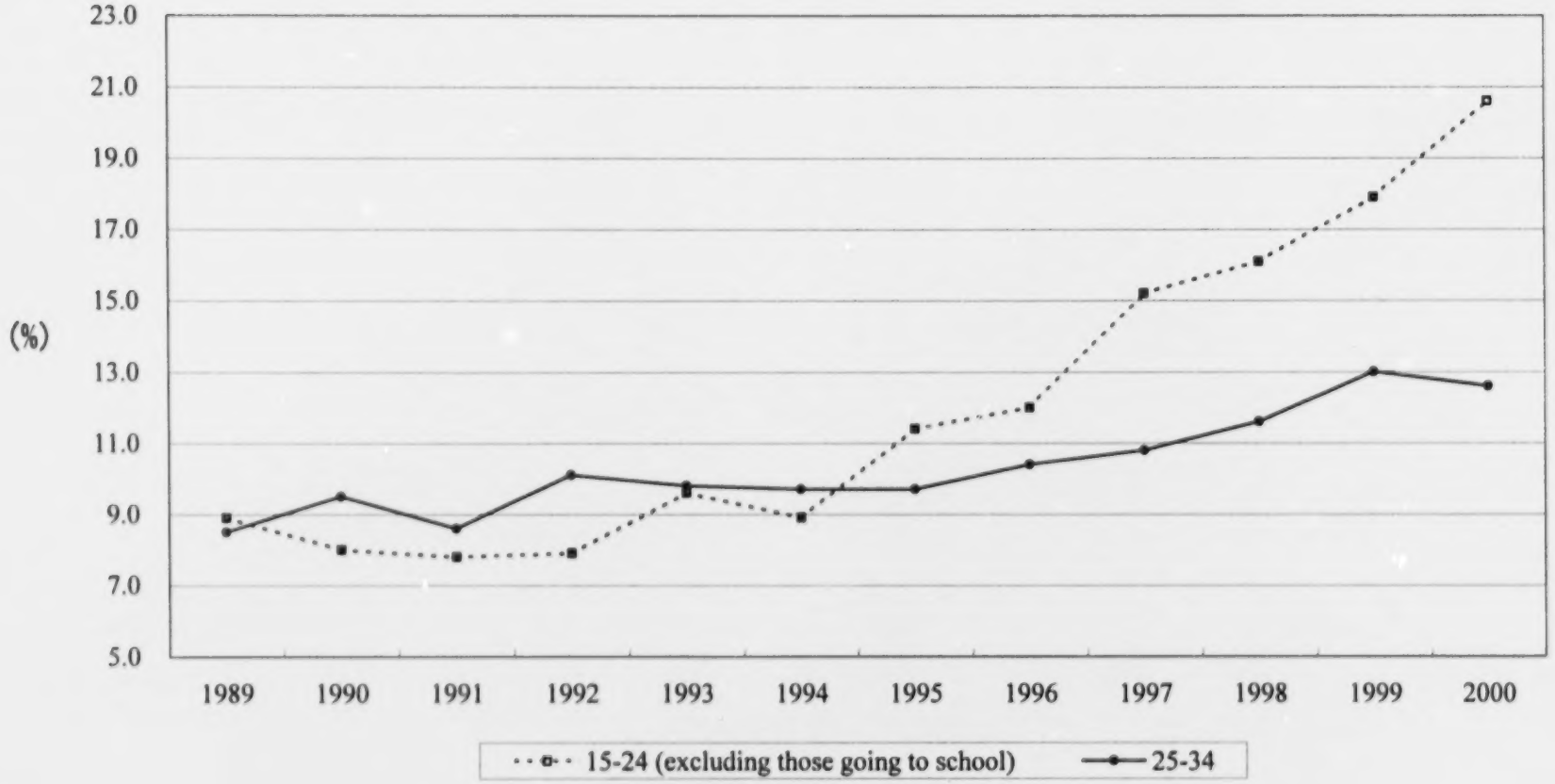
OECD. (1998). *Employment Outlook*, OECD: Paris.

Figure 1. Unemployment Rates by Age Category in Japan



Source: Labor Force Survey, Management and Coordination Agency, Japan.

Figure 2. Ratio of Part-Time Workers out of All Employees by Age Category in Japan



Source: Labor Force Survey, Management and Coordination Agency, Japan.

Table 1. Employment experiences of workers aged 15 to 29 years old

(Status at the time of the survey)

	Estimated numbers (in 10,000)	Shares (%)
(1) Entire population[1]	1233.7	100.0
(2) Became full-time worker upon leaving school	1033.3	83.8
(2-1) Never changed employers	737.4	59.8
(2-2) Changed employers	293.7	23.8
(2-2-1) Experienced 1 full-time job	85.5	6.9
(2-2-2) Experienced 2 different full-time jobs	132.6	10.8
(2-2-3)Experienced 3 different full-time jobs	40.3	3.3
(2-2-4) Experienced 4 or more different full-time jobs	14.7	1.2
(3) Did not become full-time worker upon leaving school	200.3	16.2
Reasons for not becoming full-time worker		
Couldn't find full-time job	37.6	3.1
Didn't take full-time job, although such jobs were available	42.7	3.5
Didn't want to take full-time job in the first place	40.8	3.3
Other reasons	76.5	6.2
(3-1) Obtained full-time jobs since	132.4	10.7
(3-1-1) Never changed employers[2]	36.2	2.9
(3-1-2) Changed employers	86.8	7.0
(3-1-2-1) Still employed by the first full-time employer	31.4	2.5
(3-1-2-2) No longer employed by the first full-time employer	54.1	4.4
(3-1-2-2-1) Experienced 1 full-time job	17.5	1.4
(3-1-2-2-2) Experienced 2 full-time jobs	24.8	2.0
(3-1-2-2-3) Experienced 3 full-time jobs	8.9	0.7
(3-1-2-2-4) Experienced 4 or more full-time jobs	2.4	0.2
(3-2) Never experienced full-time job	66.3	5.4
Major activities since leaving school		
(3-2-1) Looking for job	3.2	0.3
(3-2-2) Part-time work	42.4	3.4
(3-2-3) Helping housework	4.0	0.3
(3-2-4) Studying	6.0	0.5
(3-2-5) Social work/volunteer work	0.0	0.0
(3-2-6) Hobby	2.2	0.2
(3-2-7) Other activities	8.0	0.7

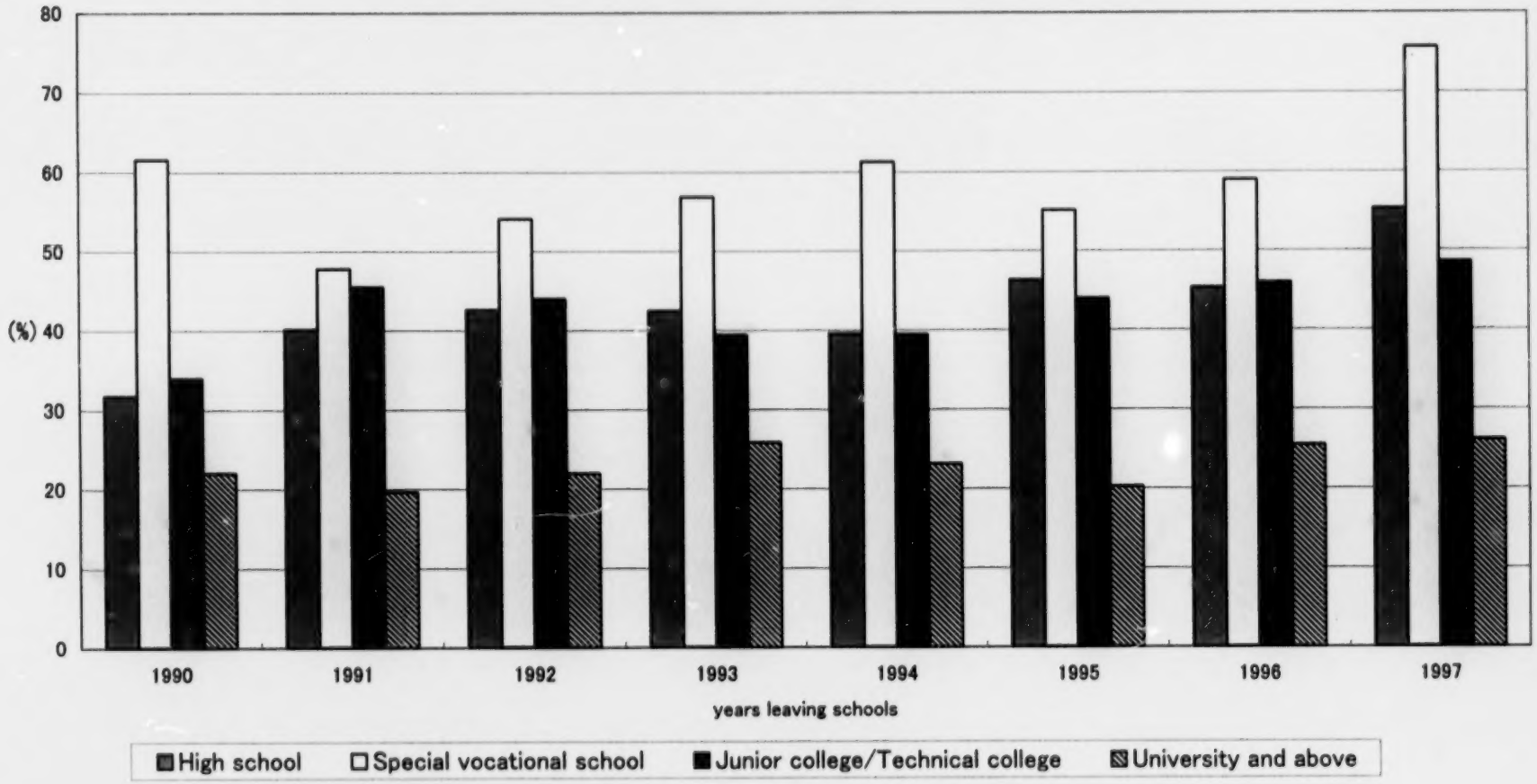
Notes: Figures are weighted to restore shares in the population. Full-time job above is equivalent to full-time regular job.
(1) Exclude youths who are either unemployed, out of the labor force, or working either at public institutions or firms with less than 5 regular workers.
(2) Those who are still employed by their first full-time employer.

Table 2. Relationship between "willingness to improve their work skills" and employment experiences of young workers

Employment experiences	Yes	No	Don't know
Became full-time regular worker upon leaving school (83.8%)	**76.9**	**4.3**	**18.8**
Became full-time regular worker upon leaving school and have been staying with the same employer since (59.8%)	78.5	4.1	17.4
Became full-time regular worker upon leaving school and since changed employer (23.8%)	73.0	4.6	22.4
Didn't become full-time regular worker upon leaving school (16.2%)	**66.9**	**5.8**	**27.3**
Didn't become full-time regular worker upon leaving school, but since obtained a full-time job (10.7%)	72.2	4.7	23.1
Never obtained any full-time regular jobs since leaving school (5.4%)	55.6	8.0	36.1

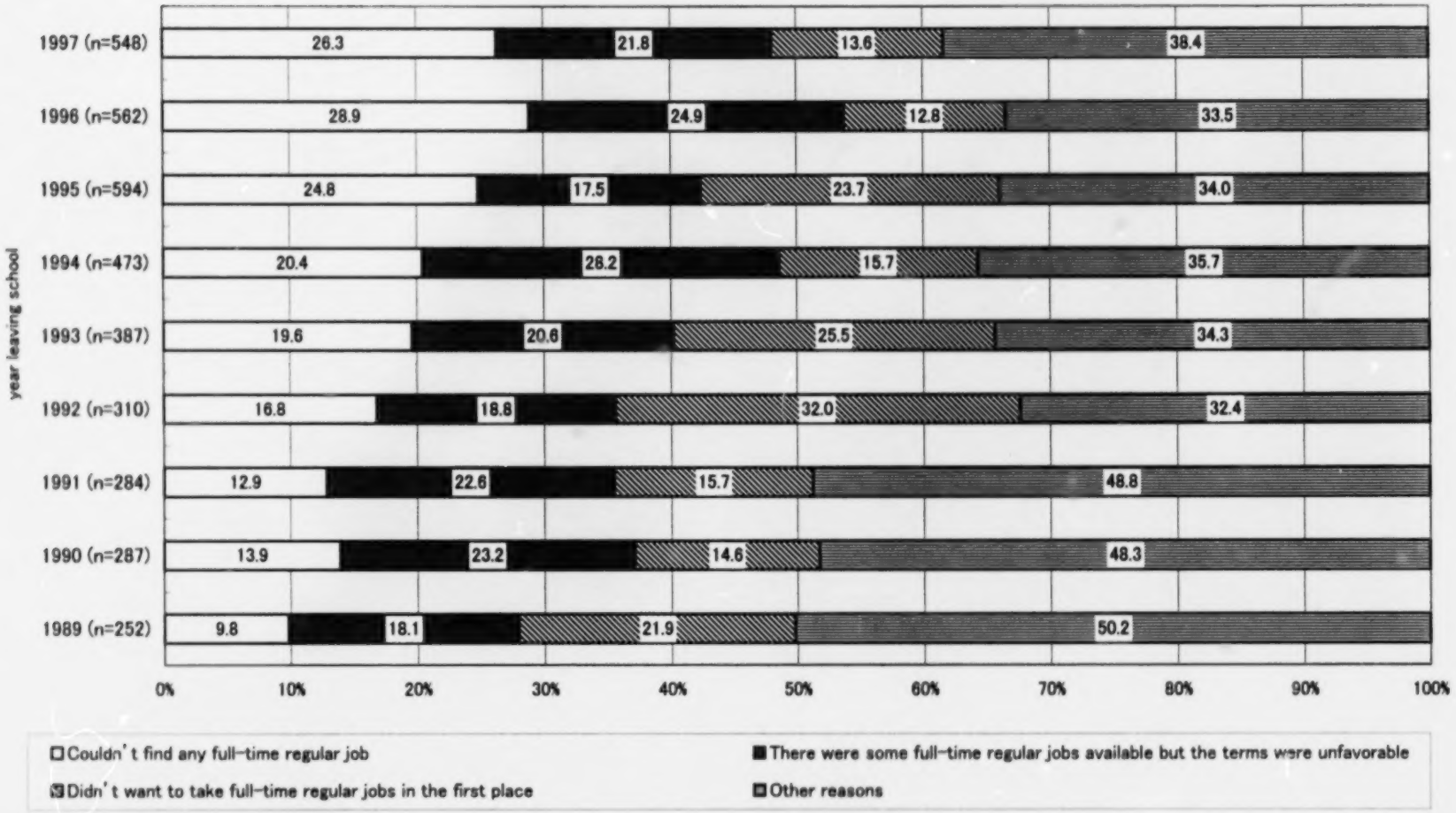
Note: Ratio of workers who answered "yes," "no", "don't know" to the question, "do you feel the need to improve your work related skills?" at the time of the survey. Figures are weighted to restore composition in the population. Figures in the parenthesis are shares in the population applicable to each pattern of employment experiences.

Figure 3. Ratio of workers who thought the vocational guidance at school was useful out of those who obtained full-time regular jobs upon leaving school



Note: . Figures are weighted to restore composition in the population..

Figure 4. Reasons for not obtaining full-time regular job upon leaving school



Note: Composition out of workers who didn't obtain full-time regular work upon leaving school. . Figures are weighted to restore composition in the population. Figures in the parenthesis indicate the number of samples in our data.

Table 3.1 Determinants of the probability to obtain a full-time regular job upon leaving school (probit model:15-29 year olds)

	Parameter estimates	Marginal effects	P-value
Gender (male)			
Female	-0.072	-0.019	0.00
Educational attainment (General high school)			
Junior high school	-0.606	-0.199	0.00
Vocational high school	0.559	0.126	0.00
Special vocational school arts	0.243	0.059	0.00
Special vocational school: : engineering or sciences	0.563	0.117	0.00
Technical or Junior college: arts	0.373	0.088	0.00
Technical college or Junior college: engineering or sciences	0.566	0.116	0.00
University or above : arts	0.696	0.152	0.00
University or above: engineering or sciences	0.827	0.152	0.00
Unemployment rate a year prior to leaving school	-0.303	-0.081	0.00
Trend term	-0.046	-0.012	0.00
Constant	1.834		0.00
Sample size	21235.00		
LR Chi-square (d.f.)	1195.64(11)		
Quasi R^2	0.06		

Note: Reference groups are indicated in parentheses. P-value states the probability for two-sided test.

Table 3.2 Determinants of the probability to obtain a full-time regular job upon leaving school (probit model: 15-29 year olds, male)

	Parameter estimates	Marginal effects	P-value
Educational attainment (General high school)			
Junior high school	-0.428	-0.123	0.00
Vocational high school	0.664	0.130	0.00
Special vocational school arts	0.387	0.078	0.00
Special vocational school: : engineering or sciences	0.696	0.121	0.00
Technical or Junior college: arts	0.320	0.065	0.01
Technical college or Junior college: engineering or sciences	0.933	0.135	0.00
University or above : arts	0.918	0.181	0.00
University or above: engineering or sciences	1.039	0.162	0.00
Unemployment rate a year prior to leaving school	-0.170	-0.041	0.00
Trend term	-0.042	-0.010	0.00
Constant	1.313		0.00
Sample size	9396.00		
LR Chi-square (d.f.)	645.65(10)		
Quasi R^2	0.07		

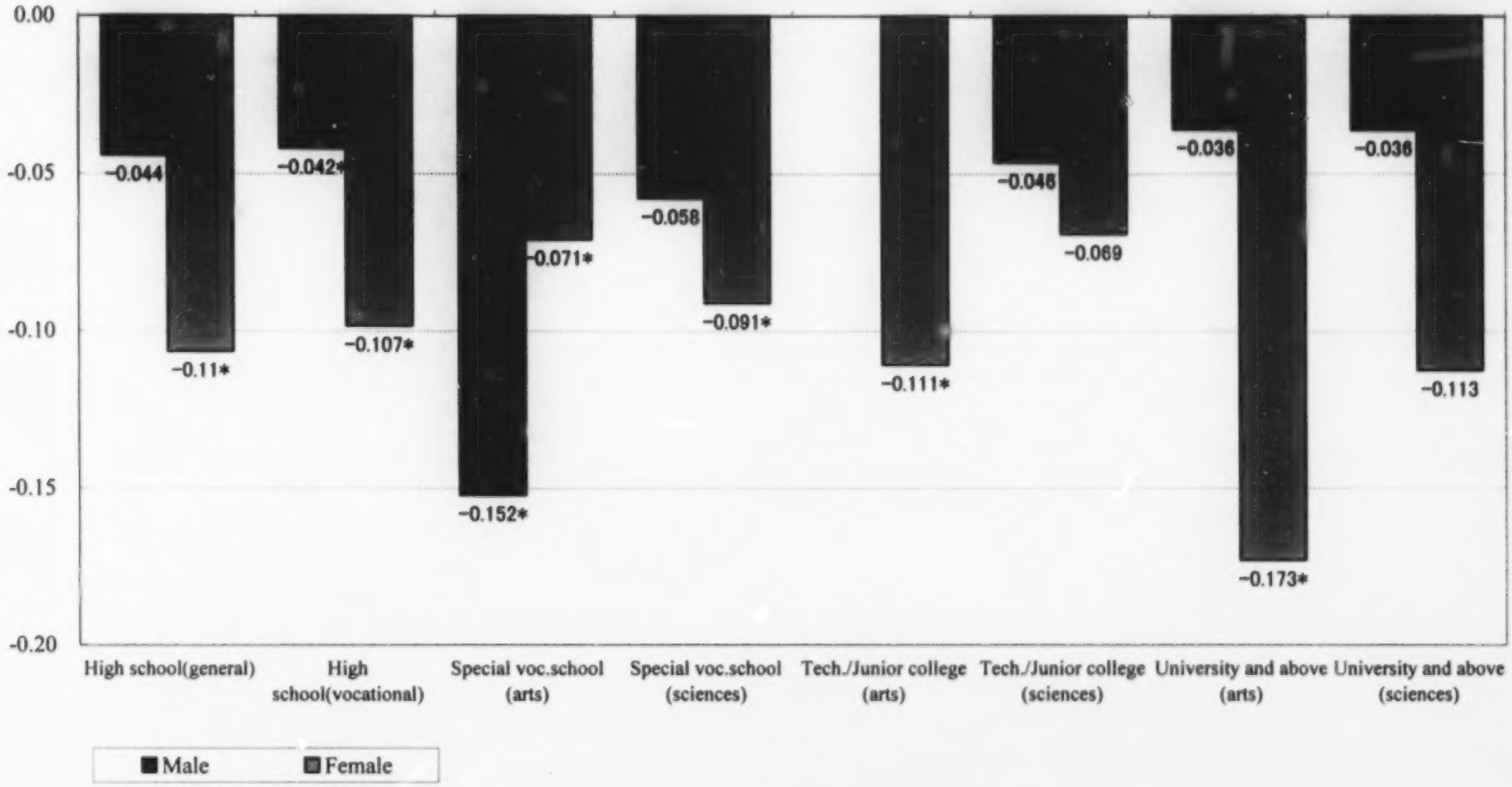
Note: Reference groups are indicated in parentheses.

Table 3.3 Determinants of the probability to obtain a full-time regular job upon leaving school (probit model: 15-29 year olds, female)

	Parameter estimates	Marginal effects	P-value
Educational attainment (General high school)			
Junior high school	-0.765	-0.271	0.00
Vocational high school	0.492	0.121	0.00
Special vocational school arts	0.140	0.038	0.01
Special vocational school: : engineering or sciences	0.472	0.110	0.00
Technical or Junior college: arts	0.292	0.078	0.00
Technical college or Junior college: engineering or sciences	0.394	0.095	0.00
University or above : arts	0.473	0.115	0.00
University or above: engineering or sciences	0.368	0.089	0.00
Unemployment rate a year prior to leaving school	-0.382	-0.109	0.00
Trend term	-0.049	-0.014	0.00
Constant	2.097		0.00
Sample size	11839.00		
LR Chi-square (d.f.)	611.14(10)		
Quasi R^2	0.05		

Note: Reference groups are indicated in parentheses. . ***, **, and * denote significance from zero at1%, 5% , and 10%, respectively for two-sided test.

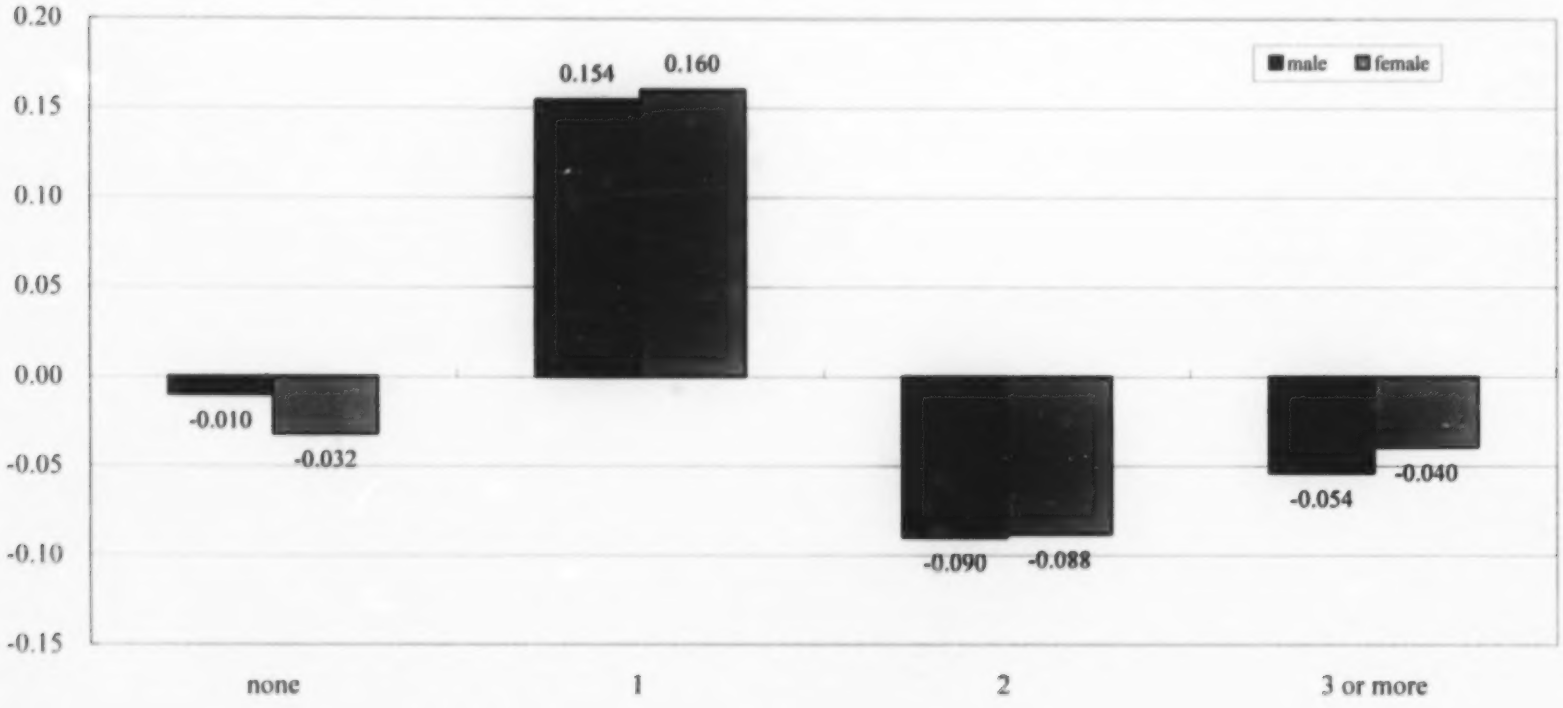
Figure 5. Marginal effect of the unemployment rate one year prior to leaving school on the probability to obtain a full-time regular job



Notes: Estimated marginal effects of average unemployment rate one year prior to leaving school on the probability to become a full-time regular worker upon leaving school. The regression includes, as additional explanatory variables, a trend term plus constant. Estimated effects different from zero at 10% level of significance are indicated by *. Technical/Junior college art category for male is excluded due to small sample size.

Figure 6.1. Marginal effect on the probability of having 0, 1, 2, or 3 or more full-time regular jobs since leaving school

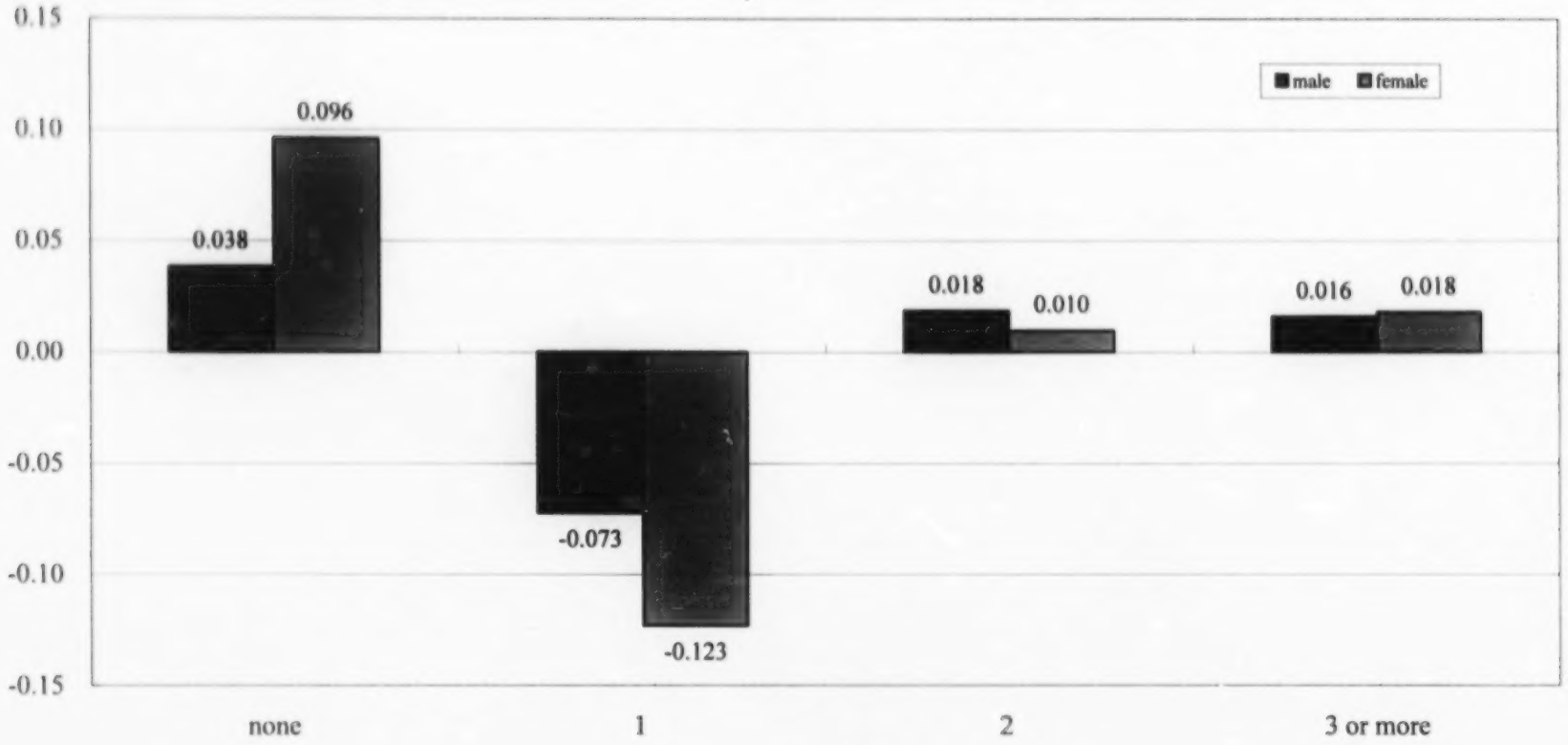
(Marginal effect on each probability of the minimum unemployment rate since leaving school)



Note: Calculated from the estimates of multinomial logit models, estimated separately for each gender. In both specifications, schooling dummies, age, and constant term are included as additional explanatory variables. The estimated coefficients of the minimum unemployment rate on each probability (the numeraire category is 1) is significantly different from zero at 10% for all but "none" category for both genders.

Figure 6.2. Marginal effect on the probability of having 0, 1, 2, or 3 or more full-time regular jobs since leaving school

(Marginal effect on each probability of the unemployment rate one year prior to leaving school)



Note: Calculated from the estimates of multinomial logit models, estimated separately for each gender. In both specifications, schooling dummies, age, and constant term are included as additional explanatory variables. The estimated coefficients of the unemployment rate on each probability (the numeraire category is 1) is significantly different from zero at 10% for all but category 2 for both genders.

Table 4.1 Determinants of the probability of leaving full-time regular job (proportional hazard model, 15-29 year olds, both genders)

	(1)		(2)	
	Parameter estimates	P-value	Parameter estimates	P-value
Gender (male)				
Female	0.938	0.00	0.938	0.00
Educational attainment (General high school)				
Junior high school	0.213	0.03	0.211	0.03
Vocational high school	-0.105	0.01	-0.107	0.01
Special vocational school arts	0.022	0.71	0.018	0.76
Special vocational school: engineering or sciences	0.072	0.28	0.072	0.28
Technical or Junior college: arts	-0.140	0.00	-0.144	0.00
Technical college or Junior college: engineering or sciences	-0.297	0.00	-0.301	0.00
University or above : arts	-0.535	0.00	-0.540	0.00
University or above: engineering or sciences	-0.842	0.00	-0.844	0.00
Unemployment rate a year prior to leaving school	0.318	0.00		
Openings to application ratio a year prior to leaving school			-0.275	0.00
Time-varying unemployment rate	-0.085	0.08		
Time-varying openings to application ratio			0.192	0.00
Most important criteria in selecting the first full-time regular job (can make a full use of my skill/ability)				
Contents of job, occupation	-0.085	0.04	-0.087	0.04
Size of the company, its name-value	-0.504	0.00	-0.507	0.00
Future prospects	-0.353	0.00	-0.353	0.00
Social worthiness of the job	-0.543	0.00	-0.546	0.00
Merit rather than seniority based job	0.100	0.50	0.092	0.53
Convenient for commuting	-0.406	0.00	-0.406	0.00
Good pay	0.136	0.03	0.134	0.03
Good work conditions (hours, holidays)	-0.092	0.14	-0.095	0.12
Good location	-0.219	0.00	-0.221	0.00
None or limited transfers	-0.424	0.00	-0.424	0.00
Good fringe benefits	-0.530	0.00	-0.531	0.00
Other criteria	-0.254	0.00	-0.254	0.00
Main advisor in selecting jobs (own decision)				
School teachers or alumni	-0.119	0.00	-0.117	0.00
Parents	-0.205	0.00	-0.203	0.00
Siblings, relatives, friends	-0.004	0.95	-0.005	0.94
Public employment office	0.080	0.57	0.085	0.54
Others	0.266	0.00	0.265	0.00
Vocational guidance received at school was useful	-0.280	0.00	-0.279	0.00
Didn't receive or there wasn't any vocational guidance at school	-0.144	0.00	-0.143	0.00
Occupation at the first full-time regular job (clerical)				
Professional, and managerial	0.482	0.00	0.482	0.00
Sales	1.070	0.00	1.071	0.00
Service, and security	0.814	0.00	0.815	0.00
Transportation, and communication	1.031	0.00	1.028	0.00
Production, mining, construction, and laborer	0.972	0.00	0.974	0.00
Others	1.086	0.00	1.083	0.00
Trend term	-0.010	0.29	-0.007	0.34
Sample size	16393.00		16393.00	
LR Chi-square (d.f.)	2548.14(37)		2538.71(37)	
Log Likelihood	-48497.04		-48501.756	

Note: Reference groups are indicated in parentheses.

Table 4.2 Determinants of the probability of leaving full-time regular job (proportional hazard model, 15-29 year olds, males)

	(1)		(2)	
	Parameter	P-value	Parameter	P-value
Educational attainment (General high school)				
Junior high school	0.411	0.00	0.420	0.00
Vocational high school	-0 206	0.00	-0.207	0.00
Special vocational school arts	-0.044	0.72	-0.046	0.70
Special vocational school: engineering or sciences	-0.004	0.97	-0.006	0.95
Technical or Junior college: arts	0.149	0.43	0.138	0.46
Technical college or Junior college:	-0.426	0.02	-0.431	0.02
University or above : arts	-0.892	0.00	-0.894	0.00
University or above: engineering or sciences	-1.046	0.00	-1.045	0.00
Unemployment rate a year prior to leaving school	0.363	0.00		
Openings to application ratio a year prior to leaving school			-0.303	0.00
Time-varying unemployment rate	-0.221	0.01		
Time-varying openings to application ratio			0.432	0.00
Most important criteria in selecting the first full-time regular job	0.038	0.61	0.037	0.62
Size of the company, its name-value	-0.468	0.00	-0.472	0.00
Future prospects	-0.289	0.02	-0.286	0.02
Social worthiness of the job	-0.313	0.13	-0.310	0.13
Merit rather than seniority based job	0.367	0.04	0.363	0.05
Convenient for commuting	-0.334	0.00	-0.332	0.00
Good pay	0.173	0.09	0.171	0.10
Good work conditions (hours, holidays)	0.150	0.18	0.149	0.19
Good location	-0.213	0.06	-0.210	0.06
None or limited transfers	-0.589	0.00	-0.586	0.00
Good fringe benefits	-0.132	0.60	-0.133	0.59
Other criteria	-0.267	0.07	-0.263	0.07
Main advisor in selecting jobs (own decision)	-0.115	0.06	-0.112	0.07
Parents	-0.146	0.11	-0.145	0.12
Siblings, relatives, friends	0.150	0.20	0.147	0.21
Public employment office	-0.115	0.66	-0.118	0.65
Others	0.233	0.10	0.230	0.10
Vocational guidance received at school was useful	-0.384	0.00	-0.383	0.00
Didn't receive or there wasn't any vocational guidance at school	-0.079	0.25	-0.077	0.27
Occupation at the first full-time regular job (clerical)	0.931	0.00	0.930	0.00
Sales	1.696	0.00	1.694	0.00
Service, and security	1.255	0.00	1.256	0.00
Transportation, and communication	1.416	0.00	1.413	0.00
Production, mining, construction, and laborer	1.488	0.00	1.490	0.00
Others	1.584	0.00	1.579	0.00
Trend term	0.012	0.41	0.013	0.28
Sample size	7501.00		7501.00	
LR Chi-square (d.f.)	1087.71(36)		1090.54(36)	
Log Likelihood	-13648.55		-13647.14	

Note: Reference groups are indicated in parentheses.

Table 4.3 Determinants of the probability of leaving full-time regular job (proportional hazard model, 15-29 year olds, females)

	(1)		(2)	
	Parameter estimates	P-value	Parameter estimates	P-value
Educational attainment (General high school)				
Junior high school	-0.071	0.64	-0.085	0.57
Vocational high school	-0.064	0.18	-0.067	0.16
Special vocational school arts	0.052	0.45	0.049	0.48
Special vocational school: engineering or sciences	0.096	0.28	0.100	0.27
Technical or Junior college: arts	-0.125	0.01	-0.128	0.01
Technical college or Junior college: engineering or sciences	-0.274	0.01	-0.277	0.00
University or above : arts	-0.274	0.00	-0.277	0.00
University or above: engineering or sciences	-0.666	0.00	-0.664	0.00
Unemployment rate a year prior to leaving school	0.322	0.00		
Openings to application ratio a year prior to leaving school			-0.290	0.00
Time-varying unemployment rate	-0.050	0.41		
Time-varying openings to application ratio			0.095	0.23
Most important criteria in selecting the first full-time regular job (can make a full use of my skill/ability)				
Contents of job, occupation	-0.137	0.01	-0.138	0.01
Size of the company, its name-value	-0.527	0.00	-0.530	0.00
Future prospects	-0.307	0.00	-0.307	0.00
Social worthiness of the job	-0.623	0.00	-0.632	0.00
Merit rather than seniority based job	-0.333	0.21	-0.341	0.19
Convenient for commuting	-0.449	0.00	-0.450	0.00
Good pay	0.109	0.17	0.108	0.17
Good work conditions (hours, holidays)	-0.186	0.01	-0.191	0.01
Good location	-0.209	0.01	-0.213	0.01
None or limited transfers	-0.121	0.54	-0.127	0.52
Good fringe benefits	-0.743	0.00	-0.745	0.00
Other criteria	-0.228	0.02	-0.228	0.02
Main advisor in selecting jobs (own decision)				
School teachers or alumni	-0.125	0.00	-0.125	0.00
Parents	-0.240	0.00	-0.239	0.00
Siblings, relatives, friends	-0.071	0.37	-0.070	0.38
Public employment office	0.273	0.10	0.284	0.09
Others	0.269	0.01	0.269	0.01
Vocational guidance received at school was useful	-0.250	0.00	-0.248	0.00
Didn't receive or there wasn't any vocational guidance at school	-0.176	0.00	-0.175	0.00
Occupation at the first full-time regular job (clerical)				
Professional, and managerial	0.432	0.00	0.432	0.00
Sales	0.967	0.00	0.969	0.00
Service, and security	0.773	0.00	0.775	0.00
Transportation, and communication	0.919	0.00	0.902	0.00
Production, mining, construction, and laborer	0.702	0.00	0.703	0.00
Others	1.017	0.00	1.012	0.00
Trend term	-0.019	0.11	-0.019	0.05
Sample size	8892.00		8892.00	
LR Chi-square (d.f.)	955.85(36)		947.43(36)	
Log Likelihood	-31348.98		-31353.19	

Note: Reference groups are indicated in parentheses.

Table5 Effect of vocational guidance given by schools on the probability of leaving full-time regular job (15-29 year olds, estimated separately for each schooling level)

	Vocational guidance received at school was useful	Did not receive any vocational guidance at school	Sample size
Junior high school	-0.478	0.258	179
General high school	-0.293***	-0.105	3074
Vocational high school	-0.292***	-0.164	3325
Special Vocational school : arts	-0.388***	-0.084	1085
Special Vocational school: engineering or sciences	-0.194	-0.042	943
Technical college or Junior college: arts	-0.246***	-0.184**	2453
Technical college or Junior college: engineering or sciences	-0.176	-0.402	559
University or above: arts	-0.366***	-0.424***	3605
University or above: engineering or sciences	-0.059	0.078	1165

Note: Above figures are the estimated effect of the following two dummy variables on the probability of leaving employer: 1) whether the vocational guidance received at school was useful in finding jobs, 2) whether received any vocational guidance at school. Apart from the schooling variables, other variables included in the model are the same as those listed in Table 5.1. ***, **, and * denote significance from zero at 1%, 5% ,and 10%, respectively for two-sided test.

Table 6.1 Determinants of the time to obtain the first full-time regular job after leaving school (proportional hazard model, 15-29 year olds)

	Parameter estimates	P-value
Gender (male)		
Female	-0.433	0.00
Educational attainment (General high school)		
Junior high school	-0.377	0.00
Vocational high school	0.116	0.13
Special vocational school arts	0.196	0.05
Special vocational school: engineering or sciences	0.459	0.00
Technical or Junior college: arts	0.316	0.00
Technical college or Junior college: engineering or sciences	0.362	0.03
University or above : arts	0.359	0.00
University or above: engineering or sciences	0.483	0.00
Unemployment rate a year prior to leaving school	-0.009	0.91
Time-varying unemployment rate	-0.257	0.00
Didn't want to take regular jobs in the first place	-0.276	0.00
Trend term	-0.055	0.00
Sample size	3757.00	
LR Chi-square (d.f.)	215.42(13)	
Log Likelihood	-12687.27	

Note: Reference groups are indicated in parentheses.

Table 6.2 Determinants of the time to obtain the first full-time regular job after leaving school (proportional hazard model, 15-29 year olds, males)

	Parameter estimates	P-value
Educational attainment (General high school)		
Junior high school	-0.280	0.06
Vocational high school	0.183	0.09
Special vocational school arts	0.192	0.22
Special vocational school: engineering or sciences	0.599	0.00
Technical or Junior college: arts	0.333	0.18
Technical college or Junior college: engineering or sciences	0.606	0.08
University or above : arts	0.448	0.00
University or above: engineering or sciences	0.574	0.00
Unemployment rate a year prior to leaving school	-0.077	0.52
Time-varying unemployment rate	-0.246	0.04
Didn't want to take regular jobs in the first place	-0.298	0.00
Trend term	-0.056	0.00
Sample size	1435.00	
LR Chi-square (d.f.)	78.61(12)	
Log Likelihood	-5189.90	

Note: Reference groups are indicated in parentheses.

Table 6.3 Determinants of the time to obtain the first full-time regular job after leaving school (proportional hazard model, 15-29 year olds, females)

	Parameter estimates	P-value
Educational attainment (General high school)		
Junior high school	-0.606	0.01
Vocational high school	0.045	0.69
Special vocational school arts	0.185	0.15
Special vocational school: engineering or sciences	0.244	0.25
Technical or Junior college: arts	0.260	0.01
Technical college or Junior college: engineering or sciences	0.265	0.17
University or above : arts	0.280	0.02
University or above: engineering or sciences	0.412	0.12
Unemployment rate a year prior to leaving school	0.016	0.90
Time-varying unemployment rate	-0.224	0.09
Didn't want to take regular jobs in the first place	-0.262	0.01
Trend term	-0.064	0.00
Sample size	2322.00	
LR Chi-square (d.f.)	71.99(12)	
Log Likelihood	-6332.40	

Note: Reference groups are indicated in parentheses.